

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (currently amended). A method for estimating the noise appearance in an image, comprising the steps of:

a) forming a an output noise table representing noise magnitude vs. intensity of the image; and

b) generating a scalar noise metric from the output noise table, said noise metric having a value representing the noise appearance in the image as seen by a human observer;

wherein the step of forming a an output noise table includes the steps of:

a1) forming an input noise table representing noise magnitude vs. intensity of an input image;

a2) providing an image processing chain including one or more image transforms;

a3) determining an appropriate noise transform defining the effect that each image transform will have on the noise in the image; and

a4) applying the one or more noise transforms to the input noise table to produce the output noise table representing an estimate of the noise in the image; and

~~_____ further comprising the steps of: forming a predetermined input noise table for a specific image capture process; using the predetermined input noise table to generate the noise metric for an image captured by the specific process.~~

2 (cancelled).

3 (previously presented). The method claimed in claim 1, wherein one of said image transforms is a digital image processing step.

4 (previously presented). The method claimed in Claim 1, wherein one of said image transforms is an image rendering step.

5 (previously presented). The method claimed in Claim 1, wherein one of said image transforms is human visual perception.

6-8 (cancelled).

9 (previously presented). The method claimed in Claim 1, further comprising the step of weighting the noise table by a weighting function.

10 (original). The method claimed in Claim 9, wherein the weighting function represents a histogram of the image.

11 (cancelled).

12 (original). The method claimed in Claim 1, wherein the step of generating a noise metric includes the step of locating the peak value of the noise table to obtain the noise metric.

13 (currently amended). ~~The method claimed in Claim 12, A~~ method for estimating the noise appearance in an image, comprising the steps of:

forming an output noise table representing noise magnitude vs. intensity of the image; and

generating a noise metric from the output noise table, said noise metric representing the noise appearance in the image;

wherein said generating includes:

locating the peak value of the noise table to obtain the noise metric; and

~~further including the step of taking the logarithm of the peak value to obtain the noise metric.~~

14 (currently amended). The method claimed in Claim 1, wherein the step of generating the noise metric includes the step of performing an integration or summation of the output noise table to obtain the noise metric.

15 (currently amended). ~~The method claimed in Claim 14,~~ A method for estimating the noise appearance in an image, comprising the steps of:

forming an output noise table representing noise magnitude vs. intensity of the image; and

generating a noise metric from the output noise table, said noise metric representing the noise appearance in the image;

wherein said generating includes:

performing an integration or summation of the output noise table to obtain the noise metric; and

~~further including the step of~~ taking the logarithm of the integration or summation to obtain the noise metric.

16 (cancelled).

17 (previously presented). The method claimed in claim 1, wherein the image capture process is a photographic process using a particular photographic film.

18 (previously presented). The method claimed in claim 1, wherein the image capture process is an image scanning process employing a particular film scanner.

19 (previously presented). The method claimed in claim 1, wherein the image capture process employs a particular digital camera.

20 (original). The method claimed in Claim 1, further comprising the step of using the noise metric to estimate the image quality.

21 (previously presented). The method claimed in Claim 4, wherein the image rendering step is selected from the group consisting of a photographic printing step, an ink jet printing step, a softcopy display step, a thermal printing step, an electrophotographic printing step, and a laser printing step.

22-27 (cancelled).

28 (currently amended). The method claimed as in Claim 1, further comprising the step of predicting the appearance of noisiness of an image ~~as seen by~~ to a human observer using ~~the said~~ noise metric ~~from the noise table~~.

29 (currently amended). The method claimed as in Claim 1, further comprising:

repeating said forming and generating steps with a plurality of additional images; and

~~the step of~~ sorting all of said images from least to most noisy in appearance according to ~~the~~ respective said noise ~~metric~~ metrics.

30-40 (cancelled).

41 (new). A method for estimating the noise appearance in an output image, said method comprising the steps of:

providing an input image captured using a specific image capture process;

forming an input noise table characterizing said specific image capture process;

determining an image processing chain from said input image to the output image, said image processing chain including one or more image transforms;

applying one or more noise transforms, corresponding to said image transforms, to said input noise table to produce an output noise table representing noise magnitude vs. intensity of said output image; and

generating a scalar noise metric from said output noise table, wherein said noise metric indicates the visibility of noise in the output image as seen by a human observer.

42 (new). The method of claim 41 wherein said generating further comprises locating a peak value of said output noise table.

43 (new). The method of claim 42 wherein said generating further comprises taking the logarithm of said peak value.

44 (new). The method of claim 41 wherein said generating further comprises performing an integration or summation of said output noise table.

45 (new). The method of claim 44 wherein said generating further comprises taking the logarithm of said integration or summation of said output noise table.

46 (new). The method of claim 41 wherein said determining further comprises using non-image metadata associated with said input digital image, said non-image metadata identifying said image processing chain.

47 (new). The method of claim 41 wherein said non-image metadata identifies a weighting function and said forming further comprises applying said weighting function.

48 (new). The method of claim 41 wherein said non-image metadata identifies accuracy data and said forming further comprises using said accuracy data.

49 (new). A method for estimating the noise appearance in an output image, said method comprising the steps of:

providing an input image captured using a specific image capture process;

forming an input noise table characterizing said specific image capture process;

determining an image processing chain from said input image to the output image, said image processing chain including one or more image transforms;

applying one or more noise transforms, corresponding to said image transforms, to said input noise table to produce an output noise table representing noise magnitude vs. intensity of said output image;

generating a peak or summary value from said output noise table;
and

taking the logarithm of said peak or summary value to obtain the noise metric, wherein said output noise metric indicates the visibility of noise in the output image as seen by a human observer.

50 (new). The method of claim 49 wherein said determining further comprises using non-image metadata associated with said input digital image, said non-image metadata identifying said image processing chain.

51 (new). The method of claim 49 wherein said non-image metadata identifies a weighting function and said forming further comprises applying said weighting function.

52 (new). The method of claim 49 wherein said non-image metadata identifies accuracy data and said forming further comprises using said accuracy data.

53 (new). A method for estimating the noise appearance in an output image, said method comprising the steps of:

examining pixel values of an input digital image;
forming an input noise table representing noise magnitude vs. intensity of said input digital image using said pixel values;
providing an image processing chain from said input digital image to an output digital image, said image processing chain including one or more image transforms;

propagating said input noise table through one or more noise transforms corresponding to said image transforms to produce an output noise table representing an estimate of noise magnitude vs. intensity of said output digital image; and

generating a scalar noise metric from said output noise table, wherein said output noise metric indicates the visibility of noise in the output image as seen by a human observer.